General

Guideline Title

Best evidence statement (BESt). Children with croup and the use of steroids in the emergency department.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Children with croup and the use of steroids in the emergency department. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2011 Nov 3. 4 p. [12 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1aâ€'5b) are defined at the end of the "Major Recommendations" field.

It is strongly recommended that a single dose of glucocorticoids be administered to children presenting to the Emergency Department with mild, moderate or severe croup (Russell et al., 2011 [1a]; Chub-Uppakarn & Sangsupawanich, 2007 [2b]; Dobrovoljac & Geelhoed, 2009 [4a]; Borland et al., 2008 [4a]; Port, 2009 [5a]; Syed et al., 2009 [5a]; Royal Children's Hospital, 2011 [5b]; Rajapaksa & Starr, 2010 [5b]).

Note 1: Children receiving steroids in the Emergency Department demonstrated significant improvement in symptoms and fewer return visits and/or (re)admissions as compared to placebo (Russell et al., 2011 [1a]).

Note 2: No conclusive studies exist, recommending one drug, dose or route over another for the treatment of croup. However, the oral route may be preferred due to the non-invasive nature causing less stress to the child, although intramuscular (IM), intravenous (IV) or nebulized routes may be useful in children especially those unable to tolerate medications via the oral route (Russell et al., 2011 [1a]; Local Consensus, 2011 [5]; Syed et al., 2009 [5a]).

Note 3: Patients receiving dexamethasone versus prednisolone in the treatment of croup demonstrated a statistically significant decreased likelihood of return visit/readmission compared to those receiving prednisolone, although clinical scores did not differ (Russell et al., 2011 [1a]).

Note 4: Children with severe croup may require additional, more aggressive therapies (Syed et al., 2009 [5a]).

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local consensus

†a = good quality study; b = lesser quality study

Note: See the original guideline document for further information about the dimensions used to judge the strength of the evidence.

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
It is recommended that… It is recommended that… not…	There is consensus that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation…	
Dimensions: In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.	
1. Grade of the body of evidence 2. Safety/harm 3. Health benefit to the patients (direct benefit) 4. Burden to patient of adherence to recommendation (cost, hassle, discomfort, pain, motivation, ability to adhere, time) 5. Cost-effectiveness to healthcare system (balance of cost/savings of resources, staff time, and supplies based on published studies or onsite analysis) 6. Directness (the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]) 7. Impact on morbidity/mortality or quality of life	

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Croup

Guideline Category

Assessment of Therapeutic Effectiveness

Treatment

Clinical Specialty

Emergency Medicine

Pediatrics

Pulmonary Medicine

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To evaluate, in children with croup seen in the Emergency Department, if the use of steroids versus no steroid decreases duration of symptoms and/or length of stay

Target Population

Inclusion: Children 0 to 18 years of age that present to the Emergency Department with mild, moderate, or severe croup

Exclusion: Children unable to tolerate glucocorticoids (prior history of adverse effect) or have already received a dose prior to Emergency Department visit

Interventions and Practices Considered

1. Glucocorticoid treatment (dexamethasone versus prednisolone)
2. Route of administration (oral, intramuscular, intravenous, or nebulized)

Major Outcomes Considered

- Duration of and change in symptoms
- Length of stay

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Databases: Ovid Medline

#1

1. Croup mp. Or exp Croup
2. Limit 1 (English language and humans and yr="2006-Current")
3. Limit 2 ("all infant [birth to 23 months]" or "all child [0 to 18 years]" or "newborn infant [birth to 1 month]" or "infant [1 to 23 months]" or "preschool child [2 to 5 years]" or "child [6 to 12 years]" or "adolescent [13 to 18 years]")
4. Steroids mp. Or exp Steroids
5. Limit 3 and 4

#2

1. Croup mp. Or exp Croup
2. Exp steroids Steroids/or steroids.mp.
3. 1 and 2
4. Limit 3 to (English language and humans and yr="2006-Current")

#3

Additional articles identified from reference lists of retrieved articles

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
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4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local consensus

†a = good quality study; b = lesser quality study

Note: See the original guideline document for further information about the dimensions used to judge the strength of the evidence.

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Recommendation Strength

Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	There is consensus that benefits clearly outweigh risks and burdens (or vice versa for negative recommendations).
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There is insufficient evidence and a lack of consensus to make a recommendation…	
Dimensions: In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.	
1. Grade of the body of evidence 2. Safety/harm 3. Health benefit to the patients (direct benefit) 4. Burden to patient of adherence to recommendation (cost, hassle, discomfort, pain, motivation, ability to adhere, time) 5. Cost-effectiveness to healthcare system (balance of cost/savings of resources, staff time, and supplies based on published studies or onsite analysis) 6. Directness (the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]) 7. Impact on morbidity/mortality or quality of life	

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

This Best Evidence Statement has been reviewed against quality criteria by 2 independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Borland ML, Babl FE, Sheriff N, Esson AD. Croup management in Australia and New Zealand: a PREDICT study of physician practice and clinical practice guidelines. Pediatr Emerg Care. 2008 Jul;24(7):452-6. PubMed

Chub-Uppakarn S, Sangsupawanich P. A randomized comparison of dexamethasone 0.15 mg/kg versus 0.6 mg/kg for the treatment of moderate to severe croup. Int J Pediatr Otorhinolaryngol. 2007 Mar;71(3):473-7. PubMed

Dobrovoljac M, Geelhoed GC. 27 years of croup: an update highlighting the effectiveness of 0.15 mg/kg of dexamethasone. Emerg Med Australas. 2009 Aug;21(4):309-14. PubMed

Port C. Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary. BET 4. Dose of dexamethasone in croup. Emerg Med J. 2009 Apr;26(4):291-2. [1 reference] PubMed

Rajapaksa S, Starr M. Croup - assessment and management. Aust Fam Physician. 2010 May;39(5):280-2. [7 references] PubMed

Royal Children's Hospital. Clinical practice guideline: croup (Laryngotracheobronchitis). [Internet]. Victoria, Australia: Royal Children's Hospital; 2011 Apr

Russell KF, Liang Y, O'Gorman K, Johnson DW, Klassen TP. Glucocorticoids for croup. Cochrane Database Syst Rev. 2011; (1):CD001955. PubMed

Syed I, Tassone P, Sebire P, Bleach N. Acute management of croup in children. Br J Hosp Med (Lond). 2009 Jan;70(1):M4-6. PubMed

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Glucocorticoid treatment of croup has consistently demonstrated improvements in symptoms as demonstrated by improved croup scores, within 6 hours, lasting for about 12 hours, decreased use of epinephrine, shortened hospital stays by 12 hours, and reduced subsequent visits or readmissions.

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

Foreign Language Translations

Patient Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2011 Nov 3

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

Team Leader/Author: Joe Luria, MD/Emergency Medicine

Team Members/Co-Authors: Christine White, MD, MAT/General Pediatrics, Michelle Caruso, PharmD, BCPS/Pharmacy

Support/Consultant: Wendy Engstrom Gerhardt, MSN, RN-BC/James M. Anderson Center for Health Systems Excellence

Financial Disclosures/Conflicts of Interest

Conflicts of interest were declared for each team member and no financial conflicts of interest were found.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati

Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

In addition, a suggested outcome measure is available in the original guideline document .

Patient Resources

The following is available:

- Croup. Electronic copies: Available in English and Spanish from the Cincinnati Children's Hospital Medical Center Web site.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

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